



Pre-hospital thrombolysis in Ireland – is there a place?

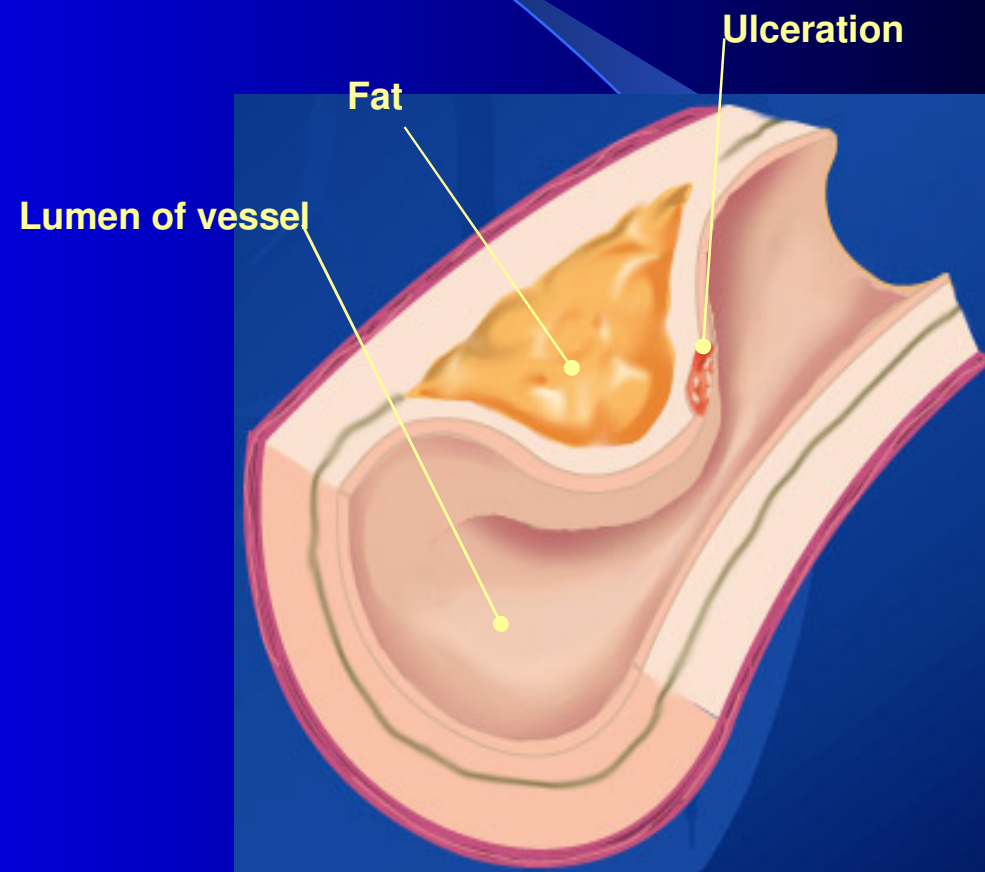
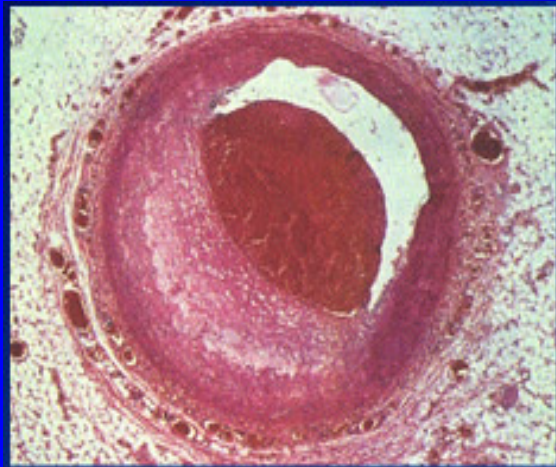
Prof. Gerard Bury

**Centre for Emergency Medical Science,
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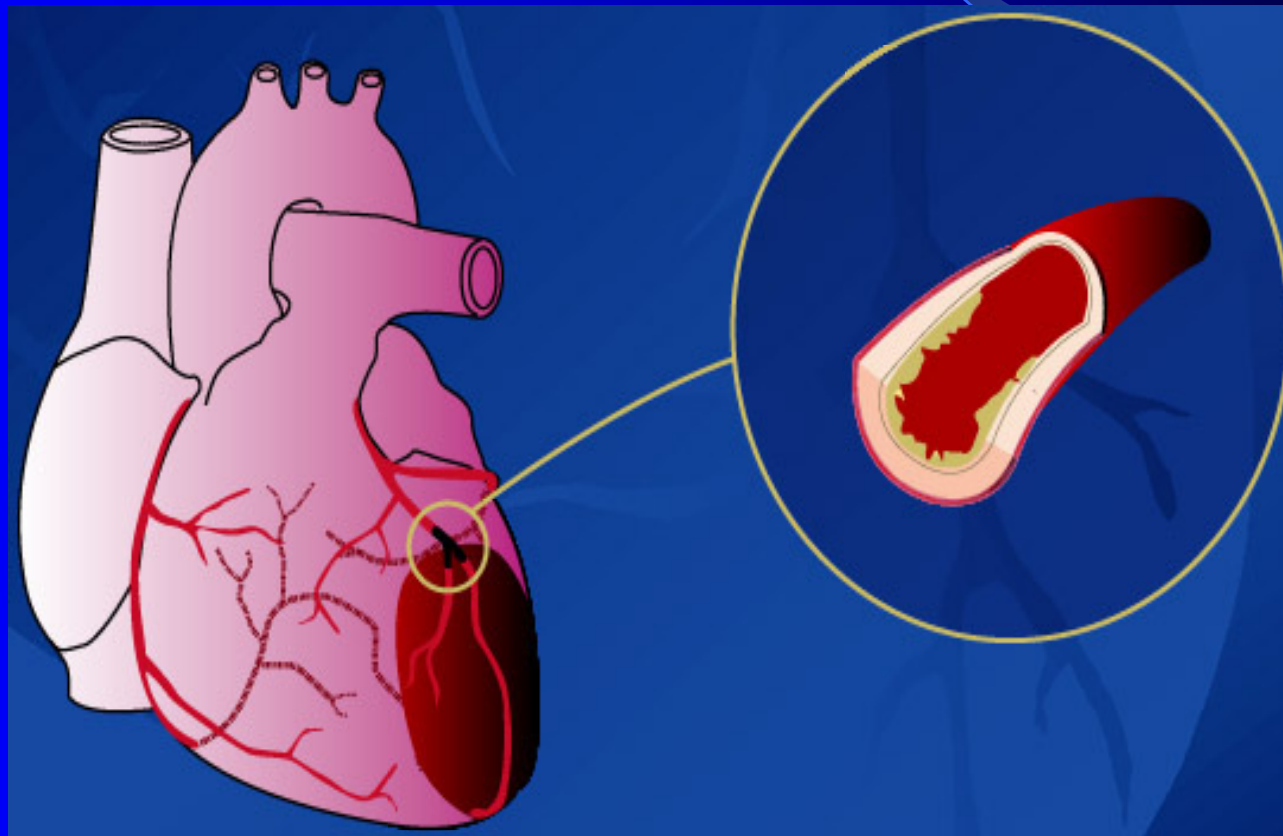
The image features a blue gradient background that transitions from a lighter blue on the left to a darker blue on the right. A curved line starts from the top left and curves towards the bottom right, creating a sense of motion or a path. In the center of the image, the word "Yes!" is written in a white, serif font.

Yes!

Atherosclerosis and coronary artery disease



Ischaemia, injury and infarction



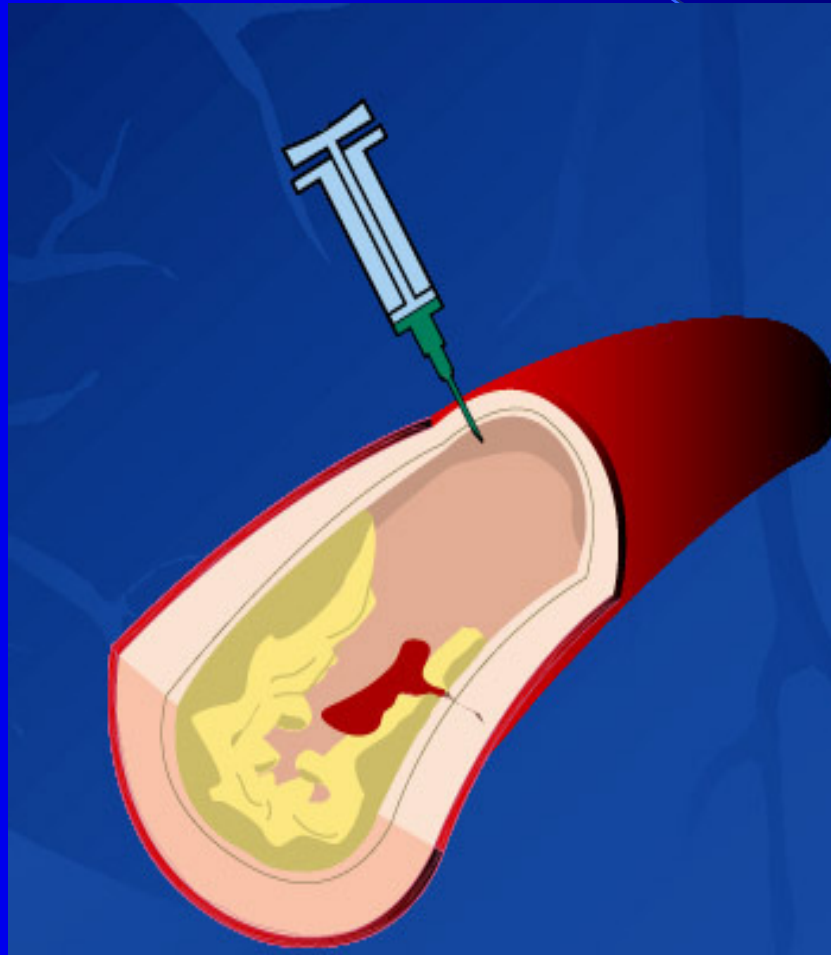
ADVANCING NECROSIS IN MYOCARDIAL INFARCTION

■ Normal ■ Ischaemia ■ Necrosis

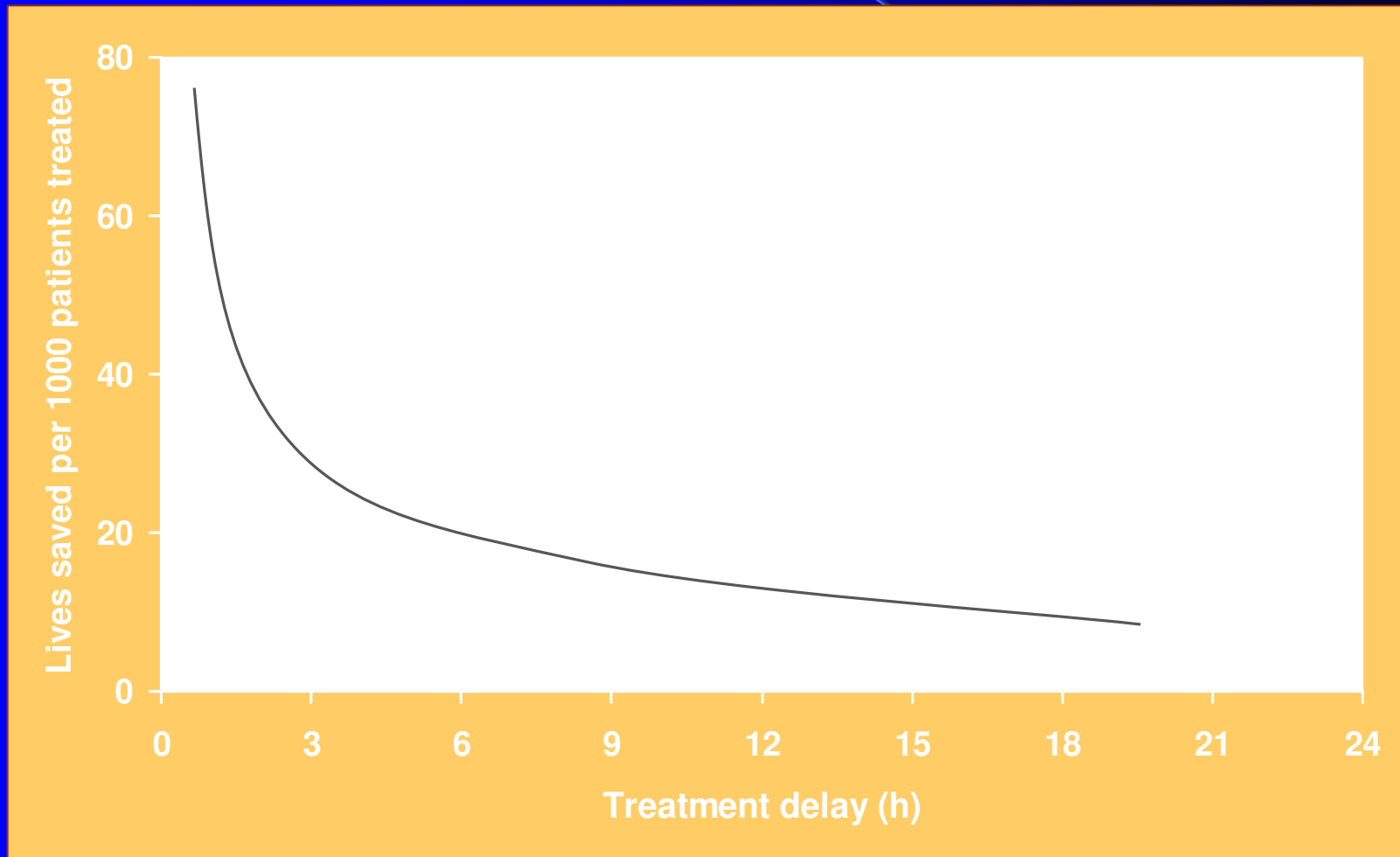


TIME SAVED =
MUSCLE SAVED

Concept of coronary patency and recanalisation



Benefit of thrombolysis by time



GREAT: 10 year survival
Rawles J. Heart 2003;89:563-4

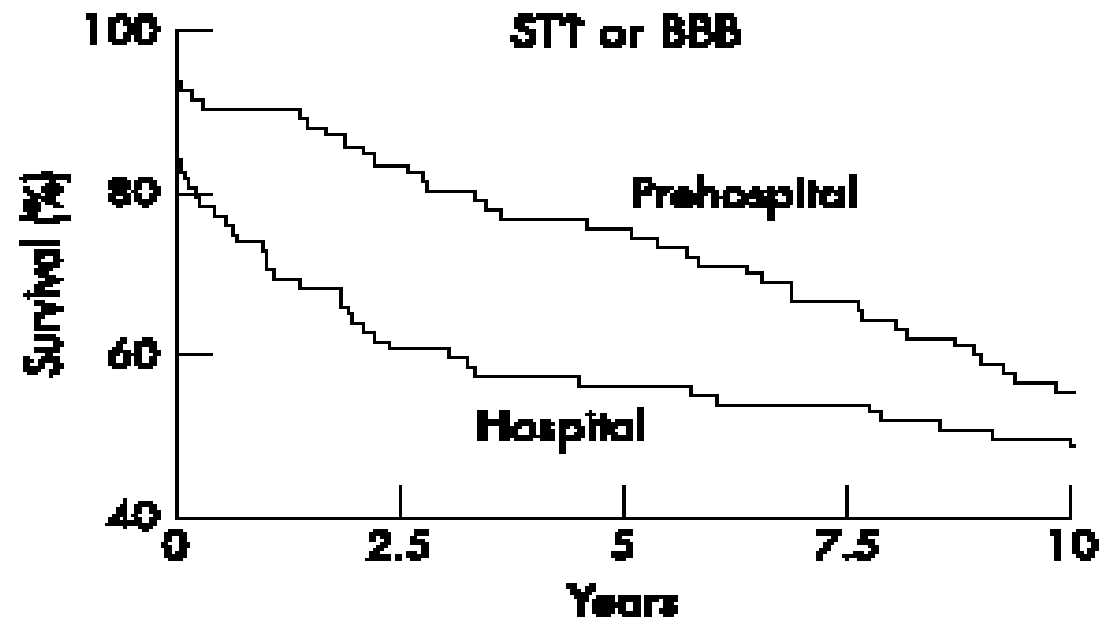


Figure 2 Survival curves for 180 patients with ST elevation or bundle branch block (BBB) on the presenting ECG, and receiving thrombolysis prehospital or in hospital.

Report of the Task Force on Sudden Cardiac Death DoHC 2006

After contacting the healthcare system (ambulance service, GP services or Emergency Department) patients with suspected AMI should:

- have access to a defibrillator within ten minutes
- be offered aspirin within 20 minutes (if appropriate)
- have a completed assessment of suitability for reperfusion therapy within 30 minutes, and
- have access to thrombolysis (if appropriate) within 60 minutes.

Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

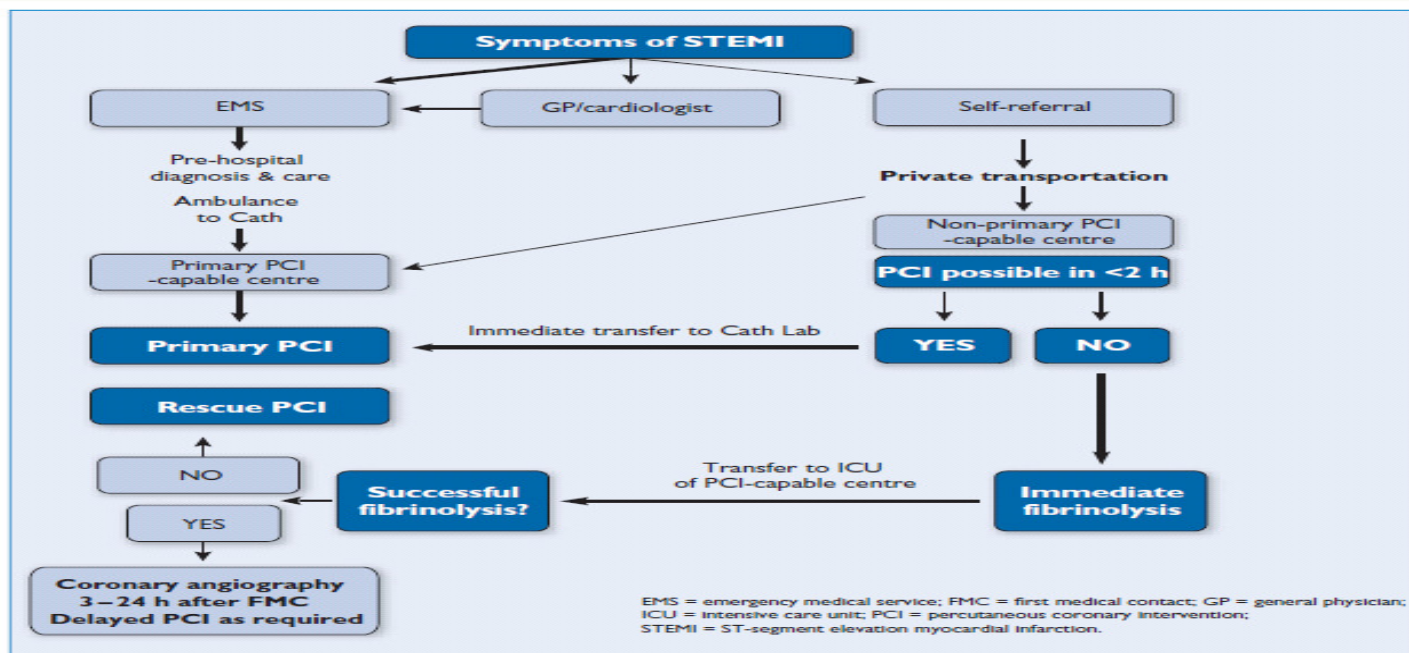


Figure 1 Organization of ST-segment elevation myocardial infarction patient pathway describing pre- and in-hospital management and reperfusion strategies within 12 h of first medical contact.

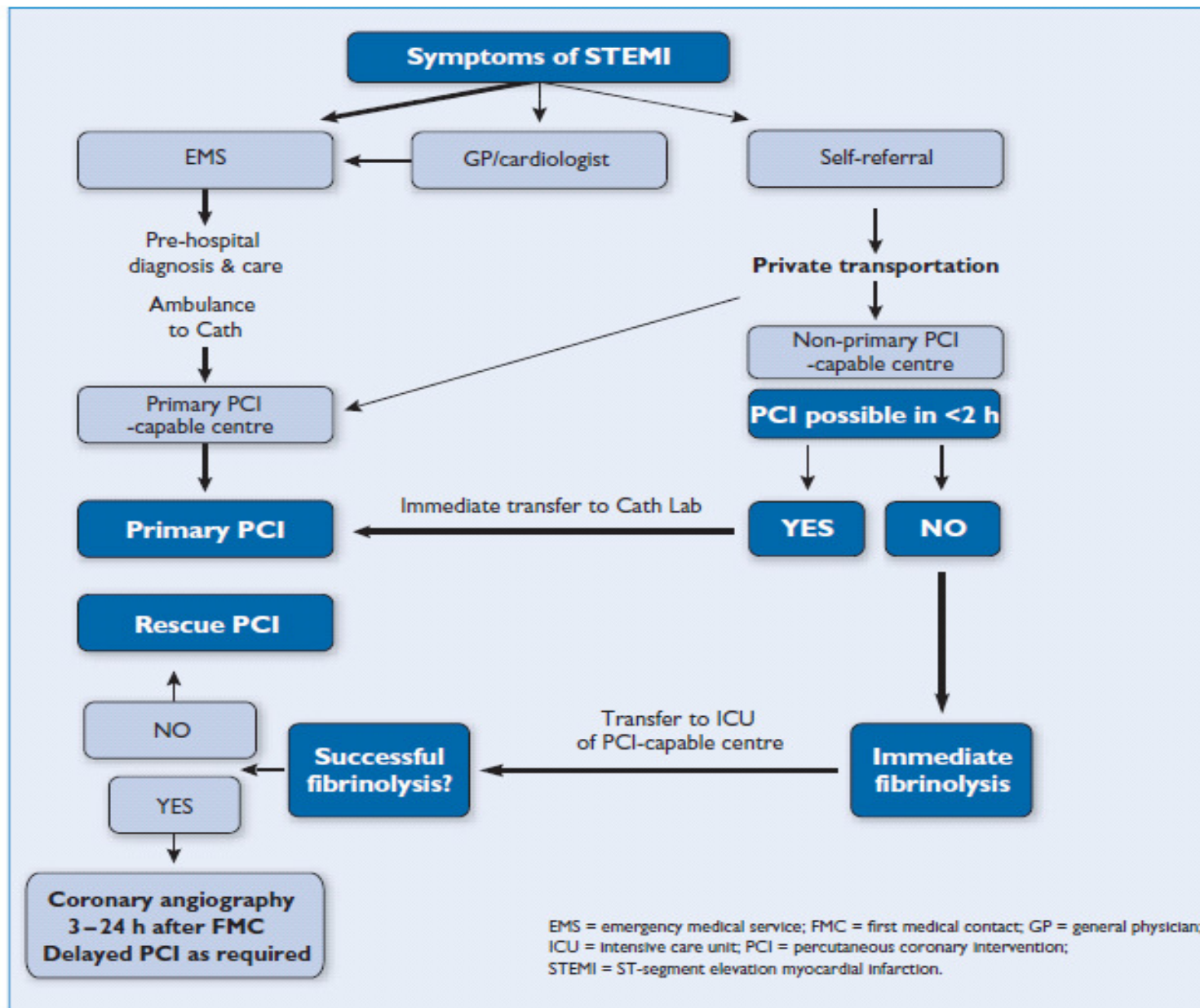


Figure 1 Organization of ST-segment elevation myocardial infarction patient pathway describing pre- and in-hospital management and reperfusion strategies within 12 h of first medical contact.

Changing Cardiovascular Health

National Cardiovascular Health Policy 2010-2019

DoHC 2010

CARDIOVASCULAR DISEASE

Cardiovascular disease mortality

Cardiovascular disease is the single largest cause of death in Ireland: in 2008, diseases of the circulatory system accounted for 9,883 (35%) of *all deaths* (CSO, provisional data). Of these, 5,188 were due to coronary (ischaemic) heart disease, 2,116 due to stroke and 2,579 due to other diseases of the circulatory system.

In terms of premature deaths (i.e. death in those under 65 years), 1,249 (20%) of all deaths were as a result of diseases of the circulatory system. Of these, ischaemic heart disease accounted for 727 deaths, stroke for 223 and other diseases of the circulatory system for 299.

Changing Cardiovascular Health

National Cardiovascular Health Policy 2010-2019

DoHC 2010

RECOMMENDATION 5.2

If PCI cannot be provided within 120 minutes of first patient contact, the patient should be assessed for thrombolysis as soon as possible. Treatment options should include pre-hospital thrombolysis in addition to the in-hospital service, depending on patient presentation.

Protocol-driven emergency thrombolysis should be provided in either pre-hospital or hospital settings. The priority in service development will be to deliver the fastest service to the widest range of patients and this should be reflected in future service plans. Pre-hospital thrombolysis has been incorporated in the advanced paramedic scope of practice by the Pre-Hospital Emergency Care Council and a supporting clinical practice guideline has been published. A programme to train GPs for appropriate roles in pre-hospital emergency care, including thrombolysis in certain rural areas, is also underway.

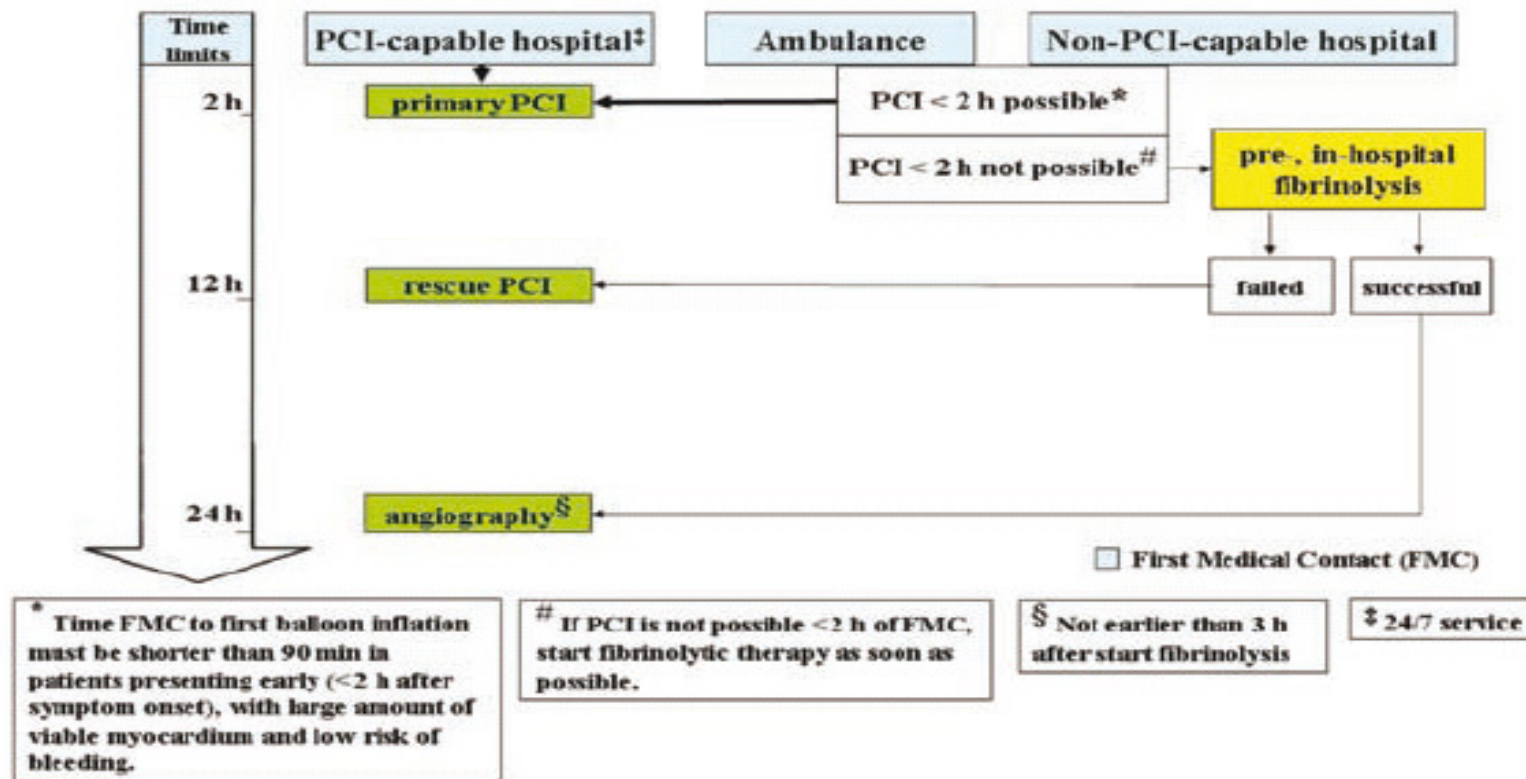
Lead organisation: HSE

Changing Cardiovascular Health

National Cardiovascular Health Policy 2010-2019

DoHC 2010

Figure 6: Decision tree for management of acute cardiac care



Source: Van de Werf *et al* (2008). Reproduced with permission of the copyright owner.

Pre-Hospital Thrombolysis in Ireland The Community Context

1. DARTS

2. GP PHT – West

3. AP PHT – 2 areas, 2009-2011

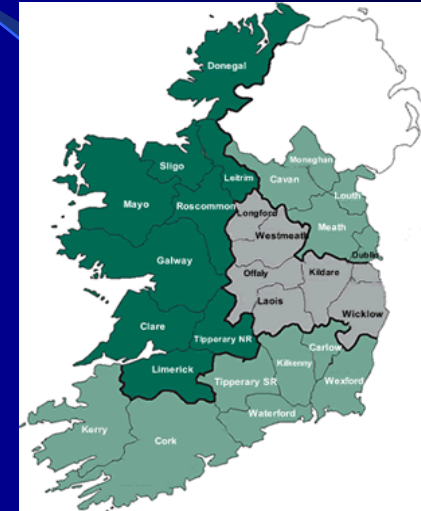
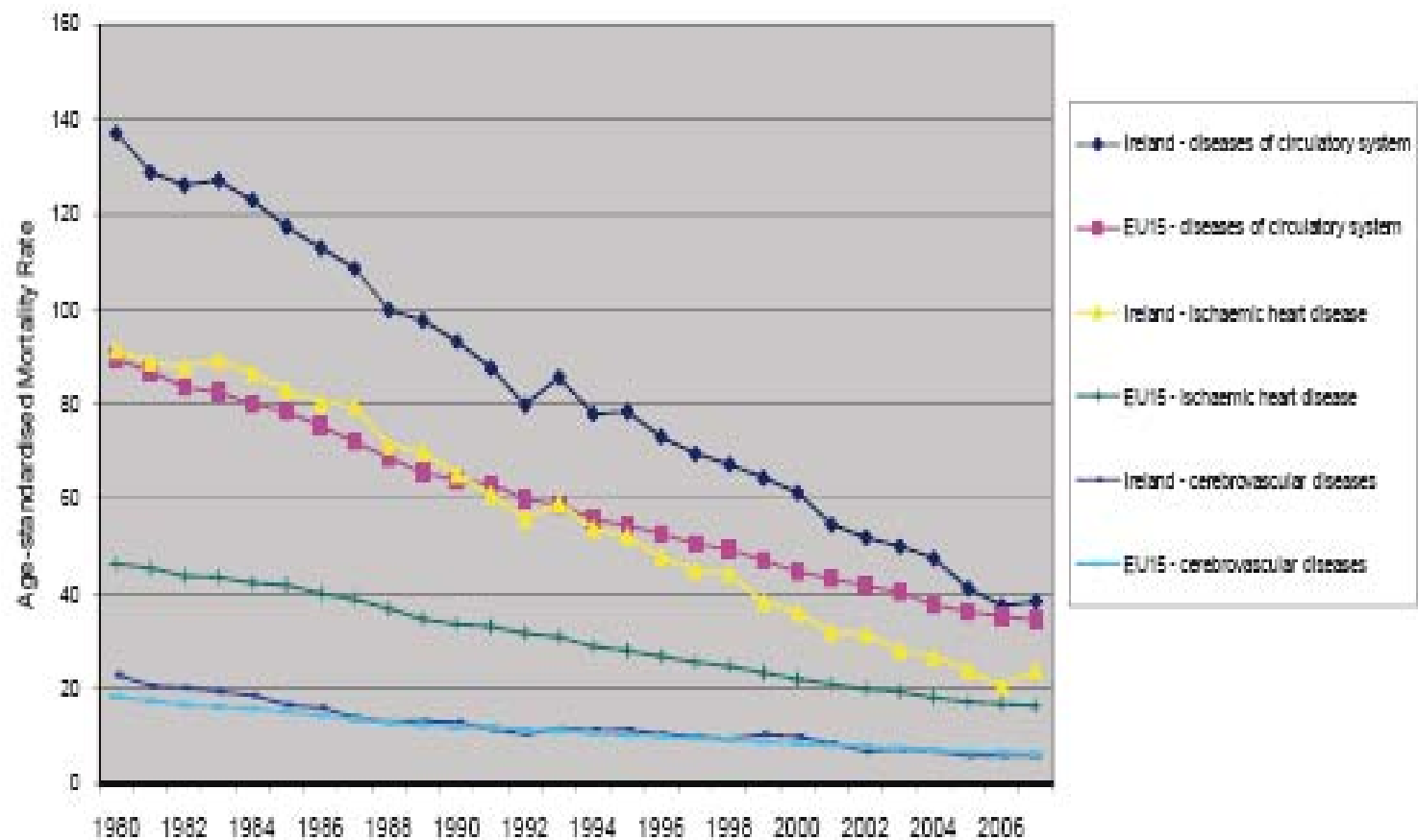
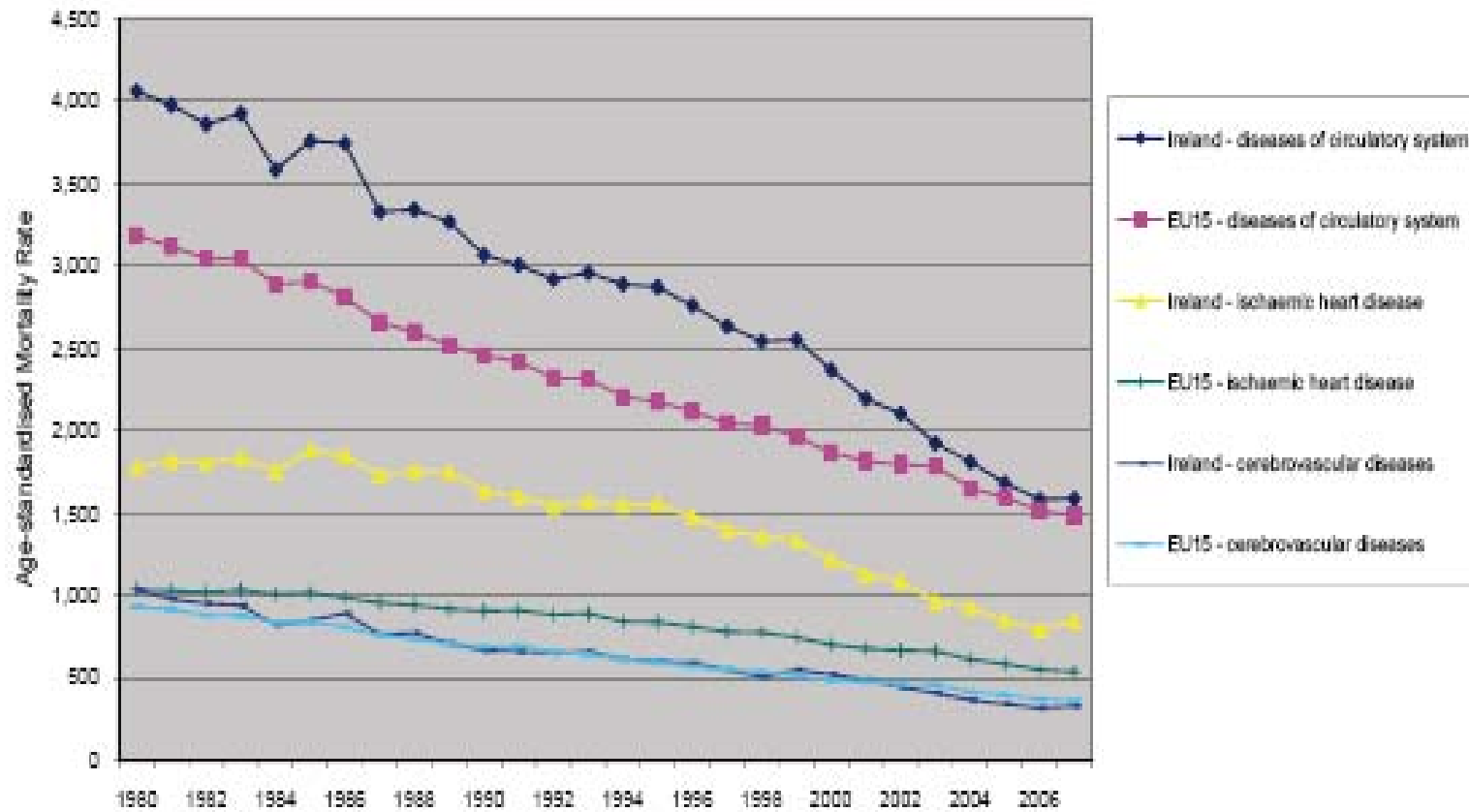


Figure 1: Age-standardised cardiovascular disease mortality rates per 100,000 population, aged 0-64 years (1980-2007)



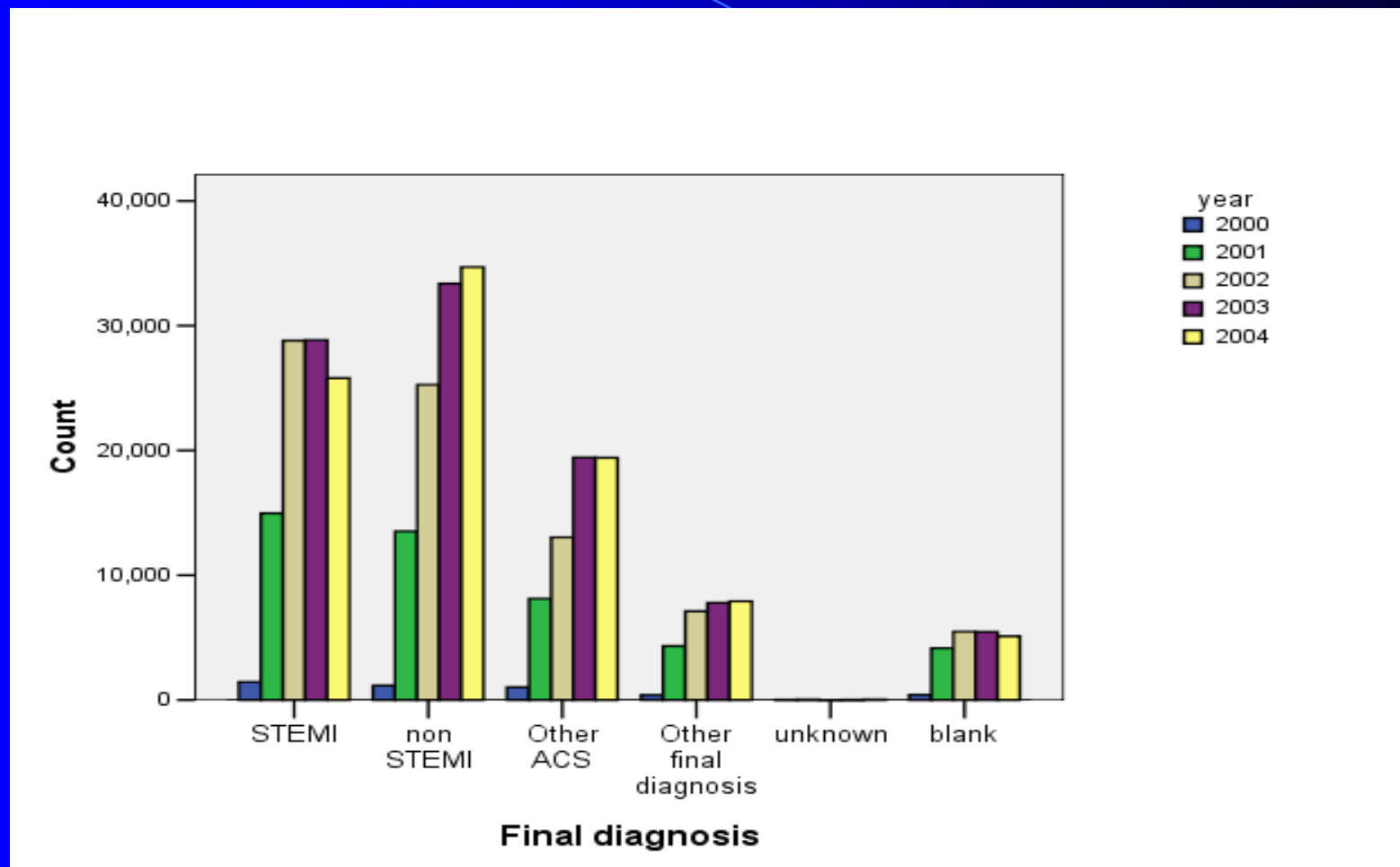
Source: WHO Health for All Database, January 2010

Figure 2: Age-standardised cardiovascular disease mortality rates per 100,000 population, aged 65+ years (1980-2007)



Source: WHO Health for All Database, January 2010

MINAP



The MERIT Project

Medical Emergency Responders: Integration & Training

Progress

- 3 years experience of Cardiac Arrest with Resuscitation Attempt (CARA) in general practice in Ireland
- 426 general practices
- 136 CARA
- 52% defibrillated - 20% discharged from hospital

Bury G, Headon M, Dixon M, Egan M. Cardiac arrest in Irish general practice. Resuscitation 2009 (epub)

Table 3

Which service provided first AED on scene (n= 136).

Service provider	Number (%)
GP	61 (44.9)
Ambulance	41 (30.1)
Out-of-hours service	10 (7.4)
Other	22 (16.2)
Pre cordial thump	1 (0.7)
Unknown	1 (0.7)
Total	136

**Table 4**

Initial rhythm reported (n= 136).

Initial rhythm	Number (%)
VF	46 (33.8)
VT	4 (2.9)
Asystole	37 (27.2)
PEA	10 (7.4)
Unknown (shockable)	21 (15.4)
Unknown (not shockable)	15 (11.0)
Unknown if shockable [#]	3 (2.2)

[#] One case where patient responded to precordial thump.

HeartBeat – Improving Heart Attack Care

Jennings S et al

IMJ Jan 2011

5 hospitals – 635 patients – 3 years

8 markers of care – 90% target, 8/9 achieved

Falling numbers of AMIs, STEMIs

RT 68-77%

In-hospital mortality 12 – 5%

PPCI – ‘a challenge’

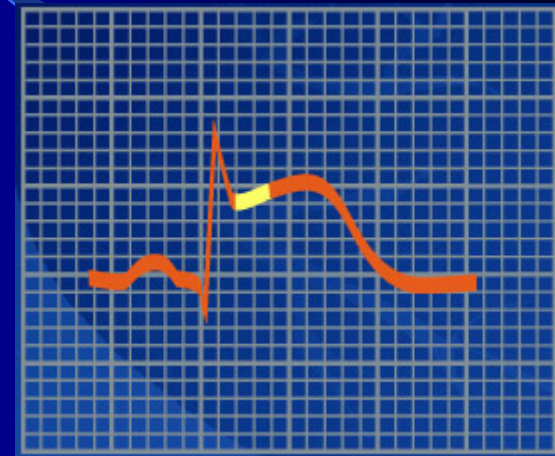
GP PHT West

Area 1

- 12 practices: kit, training, support
- 4 years: no PHT, scheme dissolved

Area 2

- 16 practices: kit, training, support
- 3 years: small number of cases
- good data and reviews, active



NAS AP Revascularisation Course 2009

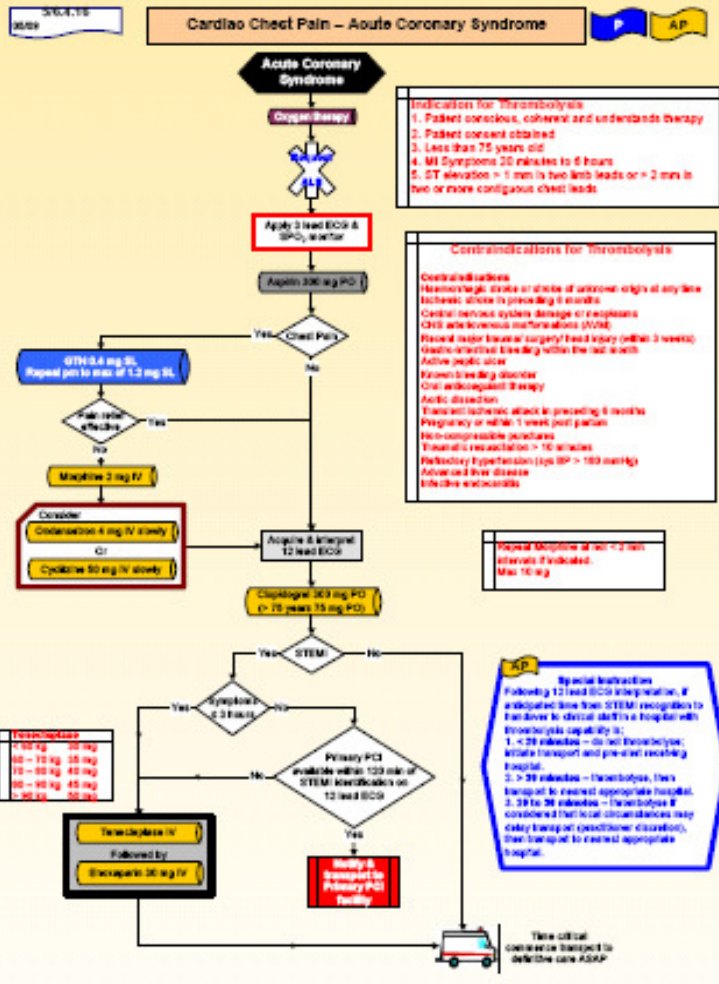
- 1) Phased national initiative by the HSE NAS
- 2) Primary PCI - first option when available
- 3) Autonomous decision making based on strict implementation of the CPG.
- 4) Goal: thrombolysis of clear cut, suitable STEMI patients seen within 6 hours of onset, who have no likelihood of PCI within 120mins of first medical contact.

Programme aims

1. Complete a clinical and ECG assessment of potential ACS patients which allows accurate identification of patients who are suitable for primary PCI or pre-hospital thrombolysis or neither.
2. Prepare and administer pre-hospital thrombolysis to suitable patients, using the ACS CPG.
3. Manage the complications of pre-hospital thrombolysis, including reperfusion arrhythmias.
4. Monitor and manage ACS patients during extended retrievals.
5. Manage and make effective use of all communications, telemetry and records facilities, including those for medical support.
6. Plan and maintain a personal CME scheme, including a learning portfolio.

MEDICAL EMERGENCIES
Cardiac Chest Pain - Acute Coronary Syndrome

S4



Reference: Reducing the Risk: A Strategic Approach, 2006, The Report of the Task Force on sudden cardiac death; The management of acute myocardial infarction in patients presenting with ST-segment elevation, 2008, European Society of Cardiology; Management of patients with unstable angina and non-ST elevation myocardial infarction, 2007, American College of Cardiology Foundation

Conclusions

- Early revascularisation essential – pPCI best
- Revascularisation pathways for suspected AMI
 - – who? where? how?
- Significant remote & rural populations
- Services and protocols available and effective
- Pre-hospital thrombolysis an essential component

Next steps

- Integrated care pathways for suspected AMI
- Robust GP/AS care pathways – who? where? how?
- Robust GP/AP PHT system in all relevant areas
- Close links with ED/CCU care
- Evaluation NB

The image features a blue gradient background that transitions from a bright blue on the left to a dark blue on the right. A white question mark is centered in the middle of the frame. The overall composition is simple and minimalist.

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Report of the
Acute Medicine Programme

Royal College of Physicians of Ireland
Directorate of Quality and Clinical Care,
Health Service Executive
September 2010

Interdependencies with the other national clinical programmes:

Acute coronary syndrome:

Direct transfer to the interventional cardiology service should be considered in cases of ST elevation myocardial infarction (STEMI). For non-STEMI cases, the need for coronary angiography within 24 hours should be considered and patients should be admitted to CCU (or ward if clinically stable). Non-acute chest pain should be managed according to protocol in a dedicated chest pain unit which should be supported by cardiology clinical nurse specialist (CNS) staff.

Ambulance services:

GPs, hospital staff and ambulance services will agree the protocols for ambulance transfer to and between hospitals.

Key messages for AP/GP thrombolysis

1. Time elapsed >20minutes <6 hours
2. Definitive ECG changes of transmural AMI
3. No contraindications to thrombolysis

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Table 1: Comparison of hospital discharges* for cardiovascular conditions (1998 and 2008)

	1998			2008			1998 versus 2008 Changes in discharge rates		
	In-patient	Day case**	Total	In-patient	Day case	Total	% change In-patient	% change Day case	% change Overall
CHD	17,937	3,498	21,435	16,569	5,477	22,046	-7.6	56.6	2.9
Heart failure	20,825	1,248	22,073	19,400	1,472	20,872	-6.8	17.9	-5.4
PVD	6,819	594	7,413	7,019	721	7,740	2.9	21.4	4.4
Stroke	6,826	50	6,876	7,326	183	7,509	7.3	266.0	9.2
TIA	2,362	15	2,377	2,643	46	2,689	11.9	206.7	13.1
Total	54,769	5,405	60,174	52,957	7,899	60,856	-3.3	46.1	1.1

* Discharges relate to 'Principal Diagnosis' for stroke, TIA and CHD, and 'Any Diagnosis' for HF and PAD. See Appendix 1 for ICD codes.

** Standard HIPE definition used to define 'Day case' episodes of care.

Source: HIPE and NPRS Unit, ESRI, for all acute and non-acute HIPE-reporting hospitals